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ECONOMIC AFFAIRS

No. 953

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ECONOMIC POLICY, ORGANIZATION AND MANAGEMENT

PARTY'S ECONOMIC STRATEGY SUMMARIZED

Moscow PLANOVOYE KHOZYAYSTVO in Russian No 12, Dec 80 pp 105-113

[Article by V. Silin and A. Sukhov: "Improving Production Efficiency and Work Quality -- A Most Important, Integral Part of Party Economic Policy"]

[Text] The USSR economy is presently in an important stage of its development. One feature of this stage is the sharp increase in the role of intensive factors of development and the decrease in extensive factors. At the October (1980) CPSU Central Committee Plenum, L. I. Brezhnev stressed that our country is entering the 1980's with a mighty economic, scientific and technical potential, with highly skilled personnel.

The USSR national economy is an enormous national economic complex which includes all branches of the national economy and industry. As of early 1981, fixed production assets were more than 1.1 trillion rubles. During the 10th Five-Year Plan, they grew nearly 1.4-fold. In this regard, fixed production assets were up-dated. During 1976-1979, 33 percent were up-dated, including 30 percent in industry and 41 percent in agriculture. During that five-year period, about 1,200 large state industrial enterprises were built and put into operation. Capacities were increased at expanded and renovated enterprises by building new shops and production facilities. The overall amount of national economic capital investment reached 635 billion rubles. The country is provided with its basic raw material and energy reserves. The material-technical base of agriculture was strengthened considerably. During 1966-1979 alone, upwards of 296 billion rubles in capital investment was allocated to build agricultural production projects of all types.

During 1966-1979, national income increased more than two-fold, industrial production increased 2.6-fold, agricultural production increased 1.4-fold. This helped solve social problems, including overcoming substantial differences in the levels of well-being of urban and rural residents, and considerable improvement in the housing, cultural and personal-services conditions for the Soviet people.

Significant successes were achieved in science and technology. The major achievements of Soviet scientists in using nuclear energy, in creating missile, space and aviation equipment and artificial crystals, in developing radio electronics and strengthening the country's minerals and raw materials base, are well-known. Research in the fields of theoretical and applied mathematics, work on improving the physical and mathematical bases of electronic computers, and other work is being expanded. The Soviet Union has won prestige in many fields of science and engineering. Major scientific research and design organizations have been created.

Social production and capital construction growth are involving ever-increasing raw and other material and labor resources in national economic circulation. However, the increasing cost of minerals mining and increased environmental protection expenditures demand continued growth in production potential and the resolution of major social problems based on increased production efficiency and improve work quality, as was stressed with particular urgency at the 24th and 25th Congresses of our party and at subsequent CPSU Central Committee Plenums.

Speaking at the 25th CPSU Congress, L. I. Brezhnev emphasized that reliance on effectiveness is a most important, integral part of our overall economic strategy.

The report by deputy N. K. Baybakov, USSR Gosplan Chairman, at the 4th Session of the 10th USSR Supreme Soviet Convocation "On the State Plan of USSR Economic and Social Development in 1981 and Progress in Carrying Out the State Plan for USSR Economic and Social Development in 1980" states that one task in the 1981 plan is to continue the party policy of intensifying and increasing the effectiveness of social production on a base of accelerating scientific and technical progress, strengthening state plan discipline and improving the system of national economic planning and management.

The intensive path of development is a natural phenomenon inherent to the economy of developed socialism. It results both from the enormous scale of social production which has been achieved and from the demands of the modern scientific and technical revolution. The intensive path of development signifies that increasing the country's economic potential will be increasingly achieved not so much by growth in the volume of capital investment, number of workers, workplaces, production capacities and fixed assets, as by substantial improvement in their use, by involving the achievements of modern science and technology in production more fully and by the intelligent expenditure of natural and labor resources.

Production intensification assumes systematic improvement in labor and production discipline, reduced personnel turnover, the fuller and more efficient use of working time, and eliminating idle time and nonproductive labor expenditures. However, opportunities for using internal reserves are being realized by no means fully. At individual enterprises, working time losses are still high.

One characteristic feature of intensification is that, in the end, we obtain a considerably greater impact, given the same expenditures of national economic resources, through substantial improvement in their use as compared with extensive reproduction factors. This enables society to solve problems of improving the well-being of the Soviet people, developing the nonproductive sphere of the national economy, improving social and cultural services to the population and improving all aspects of the socialist way of life without involving substantial additional expenditures.

Production intensification creates all the prerequisites necessary for dynamic, proportional economic growth. This task must be resolved along several lines. Using internal production reserves, accelerating scientific and technical progress, and perfecting economic planning and management and the mechanism of administration are especially important.

Our economy has enormous internal reserves. They consist of opportunities for increasing labor productivity, reducing output materials- and capital-intensiveness and using capital investments intelligently.

The main parameter of production effectiveness is labor productivity, that is, the fruitfulness of concrete labor, its effectiveness. During the 10th Five-Year Plan, it increased 14 percent in industry. A comparatively slow rate. However, if consideration is given to the fact that just 0.1 percent of the growth in productivity equals the production of more than 400 million rubles of industrial output, it is easy to imagine the importance of this indicator.

Reducing personnel turnover, using working time more fully and more intelligently and eliminating idle time and nonproductive labor expenditures are a major reserve for improving labor resources use and improving labor and production discipline. However, the opportunities for using internal reserves are being used by no means fully. At individual enterprises, working time losses have reached 20 percent or more. And loss of a minute of working time is the equivalent of many millions of rubles in output not produced.

Reducing the materials-intensiveness of production is an important reserve for increasing production efficiency. Calculations show that reducing materials expenditures in the national economy by just one percent ensures an increase of six billion rubles in national income.

Take, for example, the critical problem of metal production. Enormous sums are spent for this purpose. In 1979, we produced 149 million tons of steel, 103 million tons of rolled finished products and 18.2 million tons of steel pipe. Nonetheless, metal continues to limit the development of our economy.

It is increasingly paramount today that metallurgical industry be qualitatively restructured and that consumers use metal products economically. The reserves are substantial. There are considerable opportunities for reducing metal expenditure in ferrous metallurgy itself, and in particular by forcing the use of continuous steel teeming, treating liquid steel with synthetic slags and inert gases, and by other measures. The development of powder metallurgy will reveal substantial reserves for improving metal quality and metal use. It is already having a direct impact on reducing the metal-intensiveness of production, on raising the technical level and improving the economy of the output. The reference is to new structural materials which are an important condition for creating modern machines, units and devices with good operating and technical specifications. Moreover, powder metallurgy opens up additional opportunities in the fight against metal corrosion. It has been estimated that the national economy loses about 12-15 million tons of metal each year due to corrosion. Powder metallurgy methods enable us to reduce such losses to four million tons.

Fuel is another, no less important, problem. We have created a powerful fuel and energy complex here. It accounts for nearly nine percent of all industrial output, 29 percent of the value of industrial-production assets and more than 30 percent of all capital investments in industry. This ensures growth in fuel extraction. However, the country's fuel and energy requirements are constantly growing. In this regard, consideration must be given to moving fuel-extraction industry East and North, in which connection fuel extraction and transport will become increasingly expensive. Therefore, a significant national economic impact can be obtained from improving the fuel-energy balance structure by reducing the proportion of petroleum used to fuel electric power plants, increasing the rates of coal and gas extraction and developing nuclear power engineering. Accelerating the utilization of the Ekibastuz, Kansko-Achinsk and Kuznetsk coal basins is taking on top-priority importance.

The 1981 plan anticipates increasing nuclear and hydroelectric power plant power generation by 12 percent. Construction of thermal electric power plants based on the use of cheap coal from these basins and casing-head gas in Western Siberia is to be expanded.

Along with this, saving fuel and energy resources in every way possible remains a most important national economic task. Calculations show that expenditures aimed at using fuel and energy intelligently and economically in various branches require two- to three-fold less capital investment that those on extracting fuel and energy resources and that a one-percent reduction in electric power and fuel expenditure yields a savings of on the order of 17-18 million tons of conventional fuel. The 1981 plan anticipates an overall savings of 41 million tons of conventional fuel as fuel and energy resources through the more intelligent expenditure of light petroleum products, boiler-furnace fuel, electric and thermal power.

Reducing output capital intensiveness and improving the return on capital are important factors in improving social production efficiency. The return on capital can be improved in several ways. They include first of all increasing the load on equipment by raising the shift-index factor, which still shows a tendency to drop appreciably, although it has long since been time to raise it. Here, we need to use existing internal manpower resources at enterprises in order to create second shifts. Enterprise "bottlenecks" which limit their production capacity must be eliminated as fast as possible. Comparatively small, inexpensive measures, such as installing certain types of new machine tools, expanding auxiliary shops or improving transport, can often increase output significantly right away. Reducing construction costs or at least preventing those costs from rising are of very great importance.

Increasing the active portion of fixed assets, improving the use of raw and other materials, raising the level of specialization and cooperation, improving production distribution, conditions for extracting and thoroughly processing raw material and the branch structure of production, foremost as a consequence of outstripping rates of development of progressive branches and types of production with a high return on capital, have a positive impact on return on capital.

Growth in the effectiveness of the national economy as a whole is closely linked to improvement in capital construction, to accelerating the start-up of production capacities. Capital investments play an extremely large role in a rapidly developing socialist economy. They are the material means of change in the branch and territorial proportions of social production, of creating progressive new branches, of ensuring output growth and high rates of economic development, of introducing new equipment, of mechanizing and automating labor, of resolving the vital tasks of improving the material well-being of the people.

In our country, a huge amount of construction has been done to ensure the planned development and technical equipping of all branches of the national economy and rapid growth in the economies of the union republics and economic regions. At the same time, problems of improving capital construction effectiveness are becoming increasingly urgent. However, as was noted at the November (1979) CPSU Central Committee Plenum, the state of affairs in capital construction is not improving. There continues to be lag in the start-up of new capacities and growth in unfinished construction, which lowers the effectiveness of capital investments and of social production as a whole.

Many branches of industry and agriculture are not meeting plans for the start-up of new capacities and production projects as a consequence of a number of negative factors, primary among which are unsatisfactory construction organization, a scattering of capital investments and inadequate balance in capital construction plans. It is therefore increasingly imperative that we solve the task of revealing in the economy those links where the greatest and fastest impact can be obtained with minimal expenditures. This result can be achieved in the national economy if an increasing proportion of the capital investment is directed into renovating and retooling production so as to ensure continuous growth in capacity through the introduction of the latest achievements of science and technology and the ever-better use of intensive factors. Retooling existing enterprisen is also of great social importance, since it is accompanied by the replacement of manual labor.

And in new construction, we must increase the proportion of expenditures on equipment, that is, the active portion of fixed assets. Such improvement in the technological structure of capital investments is a large reserve for increasing efficiency. It has been calculated that each percentage point of growth in the proportion of equipment in capital investments signifies the release of more than one billion rubles worth of additional output by USSR industry with the same amount of new production assets.

Improving planning and incentives is an effective factor in increasing capital investment effectiveness. As is known, a new procedure has been established for working out the capital investment plan, one ensuring stability of the capital construction plan. Increasing attention is being paid to balancing capital investment volume with investment sources, the capacities of construction organizations, building materials and equipment resources. Existing production and capital construction planning is now done as a unified whole, and material and financial resources are directed foremost into retooling and renovation, into expanding production capacities without new construction. Another important factor is the fact that construction organizations are evaluated and given incentives on the basis of commodity construction output, that is, based on results in starting up production capacities and finished projects.

This approach strengthens the orientation of construction organizations towards the end results of construction production. In particular, the refined forms, indicators and calculation methods anticipate that in the 1981-1985 plan, new construction capital investments will be allocated only on the condition that production capacities at existing enterprises are used completely, with consideration of their renovation and retooling.

Scientific and technical progress, the broad introduction of the achievements of science and technology, are the basis for increasing the effectiveness of production along all lines, of shifting to the use primarily of intensive factors of development. At present, approximately three-fourths of the labor productivity growth is being achieved through scientific and technical progress. The task is to transform it into a decisive source of growth in the socialist economy.

The technical and economic indicators of branches of industry are being improved under the influence of scientific and technical progress. Thus, over the past nine years, the specific expenditure of conventional fuel per kilowatt-hour of electric power generated has decreased from 367 grams in 1970 to 331 grams in 1979; the coefficient of usable volume use for blast furnaces improved from 0.597 cubic meters per ton to 0.566 cubic meters per ton during that period; coal loading mechanization at breakage faces in gently and steeply sloping seams increased from 85 to 96 percent respectively. In coal industry, coal digging and delivery to breakage faces, coal and rock hauling and loading into rail cars, have been fully mechanized.

At the October (1980) CPSU Central Committee Plenum, it was emphasized once again that accelerating scientific and technical progress is closely connected with the successful development of machine building, which is doing more and more to meet the growing needs of the national economy for various types of machinery, equipment, devices, units and other equipment which ensures production growth, reduced working time, higher labor productivity and improved output quality, that is, which intensifies the technological processes of all branches of the national economy.

Scientific and technical progress has a direct impact on the development of machine building, which in turn determines acceleration of scientific and technical progress in all branches. As a result, their technical level rises, the amount of energy available to labor grows, the production apparatus is up-dated, production mechanization and automation are accelerated and unit power grows. In the current five-year plan, net cost at existing enterprises was reduced by approximately 16 billion rubles just through improvement in the technical level of production, including by three billion rubles in 1979, as against 12 billion rubles in 1971-1975. In this regard, about 400,000 workers were transferred from low-productivity manual labor to mechanized labor in 1979 due to this factor.

Technical progress assumes the uninterrupted, planned creation and utilization of new types of equipment, devices, machinery and other equipment. In the current five-year plan, we have created nearly 15,000, of which about 14,000 are in series production; the figures are 3,500 and 1,800, respectively, for 1979. According to USSR Central Statistical Administration data, at the start of 1980 some 75,000 items had won the State Badge of Quality; it was awarded to 44,000 items in 1979.

Scientific and technical progress is in the end, by creating all the prerequisites necessary to expand and deepen intensification, expressed in growth in the productivity of social labor, in lower capital-intensiveness, lower materials-intensiveness and in other positive factors. During the 10th Five-Year Plan, growth in the productivity of social labor provided three-fourths of the increment in national income and a labor savings equal to the labor of 12.5 million people. The materials-intensiveness of the social product was lowered, resulting in a savings in raw and other materials, fuel, energy and other objects of labor of about 10 billion rubles.

During the 10th Five-Year Plan to this point, in spite of a number of positive results in developing and mastering advanced technological processes, machinery, equipment and materials, the technical-economic level of production has not reached the indicators anticipated by the five-year plan. The main reason is systematic nonfulfillment of the plan for developing science, which has not become the primary criterion in evaluating the activity of associations and enterprises and in forming economic incentives funds.

In outlining ways of accelerating scientific and technical progress in the long run, the October (1980) CPSU Central Committee Plenum paid particular attention to further developing nuclear power engineering, chemistry (without which there can be no effective economy), agricultural machine building and other branches.

Based on the tasks of developing the national economy and increasing social production effectiveness, the main directions of scientific and technical progress are the following:

improve the national-economic, branch and type structure of production, increase the share of machine building and metalworking in the overall volume of manufactured output;

continue consolidating isolated capacities of technological equipment to limits which are optimum in terms of technical-economic indicators in order to significantly reduce specific capital investments, material expenditures and increase labor productivity growth;

raise the level of production electrification and the availability of electric power to labor, while at the same time meeting the demands of conserving energy resources in every way possible and accelerating the development of nuclear power engineering;

a decisive turn towards materials-conserving technological processes, restructuring the country's production apparatus in the direction of saving raw material resources in every way possible;

accelerate technological processes, make more extensive use of highly effective catalytic reactions in production; implement the discoveries of fundamental research on new methods of running processes, including under extreme and close-to-extreme conditions, as well as of processes run under high-energy conditions;

reduce production cycle duration and the number of production process stages through fundamental changes in production methods, changing over to technologies involving fewer operations and to combining different technological operations in one unit;

chemization of the national economy, manifested in accelerating the release of chemical materials and their broader use, in the accelerated dissemination of chemical processes and materials in all branches of production and in the services sphere;

comprehensive use of raw material, introduce waste-free and low-waste technology;

sharply reduce the proportion of manual labor, replace heavy physical labor with machines;

introduce technological processes ensuring continuous up-dating of output, higher product technical and economic levels and quality, in order to meet the existing and future needs of the national economy and the populace;

automate production control following assigned routines and optimizing production processes using computers.

Because they attach important significance to scientific and technical progress, the planning and administrative agencies systematically examine proposals by scientists and specialists on new technological processes and technical resolutions, selecting the most important, those whose actualization might increase production efficiency substantially, and taking them into account when working out the state plans.

The enormous scope social production has achieved, continuous development of the scientific and technical revolution, the increasing complexity of economic interrelationships, and movement of problems of increasing production efficiency to the fore -- all these new factors of the present stage make higher demands on national economic management.

Speaking at the November (1979) and October (1980) CPSU Central Committee Plenums and describing the state of our national economy in the modern period, L. I. Brezhnev pointed out enormous opportunities and major reserves in each work sector for moving forward successfully. But in order to use them, we need to raise the level of management in the broadest sense of that word.

The CPSU Central Committee and USSR Council of Ministers Decree "On Improving Planning and Strengthening the Influence of the Economic Mechanism on Improving Production Efficiency and Work Quality: reflects the systematic manner in which the party economic strategy worked out by the 23rd, 24th and 25th Congresses is being carried out with consideration of the socioeconomic development of the country under mature socialism.

One fundamental feature of the present stage of improvement in the planning system is that the reference is to improving planning and administration at all levels of economic management, from the enterprise and association to the highest level, the USSR Gosplan, in all branches of the national economy. The comprehensive approach to solving urgent problems of economic leadership is also reflected in the fact that the system of measures which as been worked out anticipated improvement in all the main aspects and levers of the economic mechanism, to be precise, in planning and in the system of economic incentives and management.

During the period prior to adoption of the decree, the USSR Gosplan and other central departments did considerable work on preparing normative documents and methods instructions.

The USSR Gosplan approved new methods instructions and forms for working out USSR state economic and social development plans which were communicated to the USSR ministries and departments and to the union republic councils of ministers.

In light of the decree on perfecting the economic mechanism, the USSR Gosplan approved a system of progressive norms and normatives to improve the substantiation of plan assignments and budget calculations, as well as the procedure for setting assignments on an average reduction in materials expenditure norms with consideration of scientific and technical achievements. The system include indicators for expenditures of and economy in the use of labor, raw and other materials and fuel-energy resources, normatives on the use of production capacities, specific capital investments, and norms and normatives for determining the demand for equipment and cable. It is the basis on which ministries and departments work out the basic norms and normatives necessary for drawing up the USSR economic and social development plan.

Jointly with the USSR Gossnab, the USSR Gosplan refined the products list of items for which the compilation of material resources balances and plans for distributing them as approved by the USSR Gosplan and Gossnab, USSR ministries and departments and union republic councils of ministers, as appropriate, is organized as part of the USSR economic and social development plans.

A more decisive change-over to direct, stable economic ties, with five-year agreements, was outlined. This will facilitate ensuring balance between the production plans of associations and enterprises and the needs of customers for specific types of output.

Limits on the numbers of workers and employees have been approved for the USSR ministries and departments and the union republic councils of ministers. The next stage in this direction is to develop certain penalties to be levied against enterprises for exceeding the personnel limits set.

Improving national economic planning is closely linked to improving plan indicators, to intensifying their orientation towards end results. Beginning with the 1980 plan, the USSR Gosplan, jointly with USSR ministries and departments, has made substantial changes in the physical measures of manufactured output.[1]

In order to expand retooling and renovation of existing enterprises, adjustment factors have been established for the fixed construction-installation estimate norms and for the norms for general overheads.

Thus, in view of the work the USSR Gosplan has done, jointly with other organizational work to prepare the necessary normative-methods documentations, the USSR ministries and departments and the union republic councils of ministers now have an opportunity to solve problems of scientific and technical progress in a comprehensive manner, to improve output quality, planning and management.

The CPSU Central Committee has called upon party, soviet, administrative, trade-union and Komsomol organizations to view implementation of the measures outlined by the party to perfect the economic mechanism as a major economic-political task. To be successful, we need to steadily strengthen state, production and labor discipline, to increase the responsibility of personnel for carrying out established plans and contractual obligations, to achieve greater efficiency in the activity of the apparatus of the ministries and other managerial agencies, greater effectiveness in decision-making.

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PLANNING AND PLAN IMPLEMENTATION

PROBLEMS OF REVISING ECONOMIC INDICATORS HIGHLIGHTED

Moscow EKONOMICHESKIYE NAUKI in Russian No 1, Jan 81 pp 76-87

[Article by G. Kiperman, university lecturer and candidate of economic sciences: "The System of Plan Indicators and the Criteria for Evaluating the Activity of Labor Collectives"; passages enclosed in slantlines printed in italics]

[Text] The CPSU Central Committee's draft for the 26th party congress, "The Main Directions for Economic and Social Development of the USSR During 1981-1985 and for the Period up to 1990," states: "During the 1980's the Communist Party will consistently pursue its economic strategy...based upon a further rise in the effectiveness of all social production, an increase in labor productivity, and growth in the social and labor activeness of the Soviet people."*

The System of Indicators for Five-Year and Annual Plans in Industry.

The system of indicators has an important role in planning and evaluating the work of ministries, associations and enterprises. The indicators that are approved in the plan characterize its chief tasks and ways to solve them, the mutual relationships of the various production elements in the system for the social division of labor from the industrial-branch and regional points of view, and the pace and proportions of development of the economy. The demands made on the economy thus are defined by these and other functions of the system of indicators. This system should be built upon scientific principles, serve as a means for correctly combining centralized state management with economic independence and the creative initiative of associations and enterprises, and orient labor collectives to making maximum use of all production resources in the interests of society and better satisfaction of its requirements.

Formulation and improvement of the system of indicators are based upon consideration of the content, nature and peculiarities of the effect of economic laws. The latter are reflected in the appropriate economic categories. Being scientific abstractions, they reflect the more essential features of reproduction, but they are inadequate for study and regulation of economic processes, and they do not permit measurement thereof. Appropriate indicators are used for these purposes.

Thus, in the final analysis, the effects of economic laws are characterized by the system of indicators: plan indicators are a form of use of economic laws in the planning of social production and of all economic elements, and reporting indicators reflect the influences of economic laws under actually existing conditions.

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*PRAVDA, 2 December 1980, p 1.

The system of indicators is being constantly improved: the demands made on it are changed as production develops. It is this development, and not the inadequacies of the indicators themselves or errors in their application, that usually cause some indicators to be replaced by others and cause changes in standard practices for determining some certain indicator or for defining its role in planning and incentives. Therefore, it is natural that bringing the system of plan indicators into accord with modern conditions and tasks for developing the national economy occupies an important place in the set of measures for improving the economic mechanism that was called for by the CPSU Central Committee and USSR Council of Ministers decree of 12 July 1979, "On Improvement of the Planning and Strengthening of the Influence of the Economic Mechanism on Increasing Production Efficiency and Work Quality." New indicators have been introduced into the system for these purposes; obsolete ones that do not meet the needs of the times have been exluded; the role of stable economic standards has been raised; regulation of the use of labor resources in capital investment by means of firmly established ceilings has been established; and so on. Measures to be taken in accordance with the decree for improving the system of plan indicators differ in specific content, but they have a common orientation: they are called upon to orient the activity of all production elements toward increasing production effectiveness and work quality and toward satisfying social and personal requirements more completely.

The system of indicators for five-year plans for economic and social development that is being introduced with the 11th Five-Year Plan is the same for ministries, agencies and enterprises. In annual plans, the tasks that have been established for the industrial ministries are different from those approved for associations and enterprises. For example, ministries establish indicators for the total amount of production, labor productivity, the output of products of the highest quality category, and certain other indicators in the annual plan independently, based upon five-year plan tasks for the corresponding year. In this case, such indicators should be no lower than those established in the five-year plan for the given year; in the contrary case they are subject to approval by the USSR Council of Ministers. At the same time, analogous indicators for associations and enterprises are approved in all cases by the superior organizations.

All indicators, economic standards and ceilings are approved in the five-year plan and are broken down by year. In considering the necessity for intensifying the role of the five-year plan as the chief form of planning and as the basis for organizing economic activity, it is stipulated that the indicators for annual plans will be made more concrete, and in some cases they will state more precisely the tasks that are established for the corresponding year of the five-year plan. It is important to note here that the ceilings on state capital investment and construction and installing work that are established in the five-year plan are not subject to reapproval in the annual plans.

The new system of indicators differs considerably from the one that was in effect during the 10th Five-Year Plan. The role of in-kind indicators is raised, especially for evaluating production-element activity. A new basic indicator of volume--standard net production--is being introduced, and labor productivity indicators are being changed accordingly. Economic standards, which are among the main tools for optimally combining stability and flexibility in planning decisions and for regulating particular deviations within previously established maxima, that is, within those maxima that do not violate the national economic proportions called for in the plan, are becoming an important means for regulating the activity of ministries, associations and enterprises. Long-term economic standards are among the means for insuring a correct relationship between centralism and democratism--the solution of an extremely important task, whose significance Comrade L. I. Brezhnev pointed out specially during the October 1980 CPSU Central Committee Plenum.

The role of the standards for forming incentive funds is being basically changed. During the 10th Five-Year Plan it was reduced: these standards actually were not fund-forming but were fund-adjusting. The plan established absolute amounts for incentive funds, which were reduced or increased as a function of the degree of fulfillment of the plan for labor productivity, the share of products in the highest quality category, and so on. Now the situation has changed. The standards have become fund-forming in the full sense of this word. They have been established in percents not of the fund for material incentives but of total profit or, in some cases, of the wage fund.

Ceilings differ in nature from approved indicators. They are not tasks that should be achieved but are maximum permissible amounts of resources that an enterprise can use, for example, to carry out the plan. For instance, the manpower ceiling is the maximum number of blue-collar and white-collar workers that the enterprise can have during the plan period. Unlike plan tasks, ceilings are not refigured for actual production of output, that is, they cannot be exceeded even if the plan for output volume is overfulfilled. In particular, exceeding the manpower ceiling is considered the same as nonfulfillment of plan tasks when bonuses are awarded to enterprise supervisors.

For the first time in planning practice, tasks for reducing the use of manual labor are established for ministries, associations and enterprises, beginning with the plan for 1981, in the form of an indicator of the ratio of worker manpower engaged in manual labor to total worker manpower at the end of the year. For the first time in planning practice, tasks will be set during the 11th Five-Year Plan for obtaining an economic benefit from conducting scientific and technical measures. The full--or national-economic--effect includes the results obtained both during production and in the process of using new equipment, but the effect on the customers is not considered because of the complexity of planning it within plan tasks. They are established to take into account growth of profit (or reduction in the prime cost of products) as a result of producer enterprises' taking scientific and technical measures.

Improvement of the System of In-Kind Indicators

In-kind indicators occupy a central place in the system of plan indicators. The fact is that, first, all other plan tasks are defined only on the basis of indicators expressed in kind. Second, since the main purpose of socialist production is the satisfaction of social requirements, the primary point here concerns definite types of material welfare that are planned in terms of in-kind indicators. All other requirements, however important they may be in and of themselves, are secondary in relation to the requirements for material welfare. Thus price, prime cost and the labor intensiveness of the manufacture of products influence the potential for satisfying requirements--they enlarge or restrict it. But the requirements themselves for material goods are satisfied by their consumer features, which find expression in in-kind measurers. Third, the in-kind material proportions of social reproduction, together with labor proportions, are decisive in relation to value.

In the past the role of in-kind indicators in planning and, especially, in evaluating the activity of enterprises was minimized somewhat. This was manifested particularly in the fact that when the plan for total volume of realization was carried out, the enterprise's work was considered satisfactory, even if it did not carry out the plan with respect to the composition of production, the products mix and variety of products and failed its customers.

The rise in the role of in-kind indicators in evaluating the work of enterprises and associations that the decree of 12 July 1979 called for is not only theoretically correct and has been substantiated in the system for material incentives, but it has great practical significance in better satisfying the requirements of production and the populace.

Simultaneously, the products mix and the list of line items in accordance with which tasks for producing output, expressed in kind, are approved for enterprises and associations, are being expanded. This will facilitate the potential for industries that are customers for the corresponding products to order the equipment they need. For it is no secret that supplying enterprises often strive to produce simpler equipment that does not fully meet the customers' needs. After mastering the output of a new machine that is more effective in operation and reporting that it had fulfilled the plan for manufacturing new equipment, the enterprise could restrict itself to producing only a few such machines per year, while continuing to produce serially machines that were less effective but simpler and more "convenient" to manufacture. Where there was a shortage of many types of equipment, interrelationships among enterprises often took shape under which it was not the customer who determined what had to be produced, but the supplier dictated what could be ordered. Right now a system of measures is being taken to raise the role of the customer in formulating plans for enterprises that manufacture equipment. This includes planning for the manufacture of machines and equipment under the expanded products list that is called for by the decree. This relates primarily to the products lists that are planned by the ministries. For example, the Mintyazhmash [Ministry for Heavy and Transport Machine Building] plan has broken down such line items as "Drilling Equipment" and "Concentrating Equipment" into smaller assemblies and components. Similar work is also being done in other machinebuilding ministries.

Simultaneously, with Gossnab's participation, ministries and agencies are approving for production associations and enterprises, taking their specialization into account, a list of output for production equipment that is subject to manufacture and shipment, in accordance with which customers and supply-and-marketing organizations can conclude contracts for shipment. If some kind of machine is indicated on the list, the manufacturing plant will have no right to refuse to conclude such a contract.

The list of line items according to which tasks for consumer-goods producing enterprises will be approved also is being expanded. This will restrict the opportunity for manufacturers to "maneuver" the products list and the variety of output to the detriment of the populace's interests, and it will facilitate for trade activity the possibility of ordering and receiving from industry commodities that enjoy high demand, including those that are relatively labor intensive or inexpensive, or less "advantageous" for production.

The improvement of in-kind measurers of output that is called for by the decree is of great importance. The problem of rational choice of indicators and of their correct application are among the more complicated problems with respect to economic, technical and organizational relationships. With change of an in-kind measurer it is necessary to reconstruct material balances and plans for distribution, to review the norms for consumption of material resources per unit of output, to introduce new costing units, to recompute production capacity, and so on.

Any physical unit--meter, ton, kilowatt or others--will permit the measurement of only one of many consumer characteristics of a product, to the neglect of other units that at times are no less important. A contradiction arises between the capability of the measurer to reflect one of the characteristics of the product and the practical requirement to consider other characteristics also. The idea cited in the works of some economists that the problem of in-kind indicators is simple is mistaken: the indicators themselves are simple, but their rational application involves the surmounting of no few complexities.

Many of the in-kind measurers now being used were put into practice when qualitative factors for developing production were not being given their proper significance. In these circumstances any unit of measurement that reflected the quantity of the output produced (without considering its qualitative parameters) basically answered the purpose. Now the situation has been changed; in the modern era, measurers that ignore the qualitative characteristics of articles do not meet the requirements laid down.

In coordination with the system of wholesale prices and material and moral incentives, in-kind indicators should motivate producers to perfect articles, to improve their parameters and to reduce their materials intensiveness and labor intensiveness. It is these tasks, as well as a policy of best satisfying social requirements, that determine the main trends in improving in-kind measurers and practice in using them. In other words, these trends are determined by orienting the production activity to achieve the highest final results. With reference to the production of output expressed in kind, /the final result is the best satisfaction of a definite requirement at minimal expenditure of social labor./ Using this criterion, each in-kind measurer and the degree of its correspondence with the requirement presented can be evaluated objectively.

Much work has been done in recent years to improve the in-kind indicators used in planning. In some branches of industry new measurers that reflect the customer properties of articles more precisely have been introduced. However, certain types of output are, as previously, being planned and analyzed in measurements that cannot be acknowledged as successful from the point of view of the tasks of better satisfying the demands of customers and of raising production effectiveness.

Such an indicator as the ton has been critized most severely of all in the literature in recent years. Not because it has more deficiencies than other physical units or that they are more serious. It is simply that they are especially noticeable. Serious deficiencies in planning the production, for example, of machines and equipment in tons are publicized widely in the press. Actually, if the dynamics of the share (weight) per unit of capacity or other leading parameter for various types of equipment are compared for a lengthy period, then the smallest shifts are achieved in reducing the weight of the machines and assemblies whose output has been planned and computed in tons.

However, conversion to planning output in pieces does not always correct the situation. In a number of industries, such as machine-tool and chemical-machinery manufacturing, the use of this indicator leads to the same deficiencies as planning in tons. The measurement of production volume in pieces and units completely answers the requirements presented where there is relative homogeneity of the products' composition. Let's say that VAZ [Volga Motor-Vehicle Plant] produces several models of the Zhiguli and the characteristics that are common to them predominate over those that are different. Measurement of the total amount of production in pieces is justified here. It is another matter when the articles differ radically in basic parameters and characteristics. The production of metal-cutting machine tools and forging and pressworking machinery, and so on is planned in pieces. As a result, the output of small machines and of multiton giants that are intended for machining large-dimension parts are summarized in a single indicator.

In accordance with the CPSU Central Committee and USSR Council of Ministers decree of 12 July 1979, USSR Gosplan, together with concerned ministries and agencies, introduced major changes in the system of in-kind measurers of output, based upon the wide use of scientifically substantiated technical and economic indicators, which will permit effectiveness, quality and other customer properties of output to be considered. Indicators of the production of equipment in tons will be used in the necessary cases only as rating indicators. Measurement in tons has been abolished for many line items. In some cases it still has not been possible to dispense with the establishment of tasks for the production of equipment (for example, rolling mills) in tons.

Many types of equipment will be planned in two units of measurements: in pieces and in units of the main parameter (piece/parameter). Where it is difficult to isolate one main parameter, it is possible to plan pieces in value terms, considering that the value should reflect the aggregate of the customer properties of articles. In particular, the production of metal-cutting machine tools will be planned in pieces and rubles.

With respect to machinebuilding output, which often is presented today to the customers "piecemeal" and unoutfitted, introducing into planning practice such measurers as "outfitted technological line," "assembly" and "installation" is of great significance. Planning in sets and lines is especially promising because of propagation of Minkhimmash [Ministry of Chemical and Petroleum Machine Building] experience that has been approved by the CPSU Central Committee.

Shipping output to customers in sets rather than "piecemeal" is more complicated. The introduction of this measurer is disadvantageous for the shipper but, on the other hand, it is advantageous for the customer, and, consequently, also for the national economy. In accordance with the CPSU Central Committee and USSR Council of Ministers decree of 12 July 1979, the Statute on the Shipment of Technological Equipment, Technological Lines, Installations, and Mechanization, Control and Monitoring Equipment in Sets has been developed and introduced into operation. Already in the plan for 1981, the planning of production in sets has been greatly expanded. Because of this, the importance of the correct determination of the composition of each of them is growing. Right now this composition often does not include means of automation and monitoring and measuring instruments, contradicting the requirement for orientation to final results. Shipping a customer a line that cannot operate because of a lack of monitoring and measuring instruments does not yield final results. The simplified treatment of the "set" indicator that is encountered in practice facilitates fulfillment of the plan in "sets" for the producer but makes consumer operation of these sets difficult. The makeup of the set is approved in an established procedure, based upon recommendations presented by the manufacturing ministry. And although this is done in concurrence with the customer (or client), his role still is not large, although in our opinion it is the customer who should have the deciding word.

If tasks are established not for the output of individual machines (where this is desirable) but of sets, then wholesale prices are also required not only for the individual machine but also for the set as a whole; the primary point should be the price of the set, which depends on the set's final parameters and is "broken down" into the prices of machines and apparatus that it includes, but that do not complete it. The price should be changed only where there is change of the parameters of the set as a whole, and not of the individual machines that make it up.

Planning the production of output in sets, lines and assemblies does not eliminate the necessity for planning production also of separate machines, mechanisms and apparatus. One and the same machine can be part of a line but can be shipped to customers separately. This is occasioned particularly by differences in the service lives of the machines that make up the line, because of the peculiarities of the functions they perform.

There is already the well-known experience of planning in sets in, for example, Minsel'khozmash [Ministry of Tractor and Agricultural Machine Building] and Minzhivmash [Ministry of Machine Building for Animal Husbandry and Fodder Production]. Minzhivmash, for example, is converting from planning the production of various fodder harvesting machines to planning the production of sets for making briquetted and granulated feeds Such an approach will enable improvement of the production of machines and equipment expressed in kind and, at the same time, avoidance of "inflation" of the national economic plan.

When planning production in sets, the role of parametric measurements such as capacity, power, productivity, throughput, load-carrying or lifting capability, and so on, increases. For examples, lines for bottling liquids (milk, beer, fruit juice and mineral waters) are planned in units and by capacity per 1,000 bottles per hour. The latter measurer correctly characterizes the consumer features of the product and, at the same time, orients the manufacturer to raise the productivity of the units and to increase their unit capacity.

However, not by far are parametric measurers always applied. Sometimes it is difficult to isolate the leading parameter, and it is not always possible to consider it apart from other parameters. Certain important characteristics of machines still do not lend themselves to quantitative measurement. Therefore, it is necessary to correctly combine in-kind indicators with value and monetary indicators.

Many in-kind indicators that do not meet modern requirements still are being used in the metallurgical, chemical and other branches of industry. Thus, output of reinforced-concrete pipe is planned in cubic meters, although their customer function corresponds more closely to another measurer--the running meter. The production of steel and cast-iron pipe is planned in tons, which is telling, negatively, on the use of metal, reducing the motivation to use thin-walled pipe. The output of many rubber-engineering, electrical-insulation and other articles are planned in tons, contradicting the task of reducing materials intensiveness. Of course, measuring a unit of measurement involves definite difficulties, but they have been surmounted, and blaming them cannot serve as a basis for using obsolete indicators.

The improvement of in-kind indicators and an increase of their role in planning do not reduce the role of cost indicators. On the contrary, the role of natural indicators signifies a rise in the scientific validity and effectiveness of the system of indicators as a whole, and, at the same time, a strengthening of the positive influence of cost indicators, since the negative consequences of their use will be much less telling.

The Indicator of Standard Net Output and Its Use in Planning

One of the most essential properties of the new system of indicators for planning and evaluating the activity of enterprises and associations is the incorporation therein of the indicator of net production (standard) in the economy's processing industries.

Net production is the value newly created by the enterprise's collective, and, for the entire sphere of material production, it is the national income. Formerly, the planning and evaluating functions, which nowadays have been consolidated in the indicator of net production, fulfilled the indicators of gross and commodity production. /Gross production is the result of labor expended on the fabrication of a product, the value of which embodies also work expended during preceding stages of the production process./ The indicators of gross production and commodity production, or realized production, are of the same kind with regard to their value structure, and they all include both transfer value and newly created value, the results of "one's own" labor and of "outside" labor that have been embodied in the means of production used, and of living labor. /Net production reflects only the results of living labor expended by the given production collective./ Net production, when it is measured in wholesale prices, breaks down into wages and profit in proportions determined by the conditions of production and distribution.

For the characteristic of total production volume of industry that enters into national-economic circulation, regardless of the role of individual enterprises in its production, it is more desirable to use indicators of commodity or realized production. They are theoretically irreproachable and objectively necessary for many planning and analytical calculations. The gross production indicator is also necessary for national economic calculations; it is used for determining social production. But these indicators are unsuitable for characterizing the operation of an individual enterprise and its production collective, since the results of the activity of the given enterprise and of its subcontractors--those who deliver raw and other materials, outfitting articles, semifinished items, and so on--are "amalgamated" in it. The planning and evaluation of enterprise activity according to the "gross" indicator contradicts the tasks of orienting it to the achievement of the highest final results and of raising production effectiveness, and this circumstance is convincingly publicized in our literature.

The question of wide use of the net production indicator in planning enterprise activity, especially for measuring labor productivity, was often posed in the past in the economics literature and in economics practice. But it proved possible to resolve it only today. A number of prerequisites helped it. First of all, the conditions of developing production and the value structure of production were changed. During the first five-year plans, when the level of mechanization and automation in production were low and the development of production ties, specialization and cooperation in the structure of gross production were weak, newly created value predominated. In 1932 the share of wages in the prime cost of production was 35.6 percent. Under these circumstances the gross production indicator permitted a basically correct evaluation of the collective's work to be obtained. Right now, transfer value predominates in gross production--in total volume of industrial production it is 70-75 percent, and the share of wages in production costs is about 14.8 percent. Under the new conditions, the gross production of an enterprise characterizes the result of the labor not so much of its collective as of its subcontracting enterprises. Moreover, there has been no standard practice for determining net production that is acceptable for enterprises. The method used by USSR Central Statistical Administration for determining national income (gross production with allowance for material expenditures during its production) is unconditionally correct, but for enterprises it is inapplicable. Right now there is a standard practice that corresponds with the conditions of operation of enterprises that operate a system of accounting for expenditures. It has been proved experimentally at large group of enterprises. As of 1 July 1980 the activity of 2,259 production associations and enterprises of 24 ministries and agencies had been planned in accordance with net production.

A standard procedure has been specified for determining net production in accordance with stable (or comparable) standards. The standards for net production (NChP) are determined in accordance with the formula

$$\text{NChP} = Z_{\text{p.r.}} = Z_{\text{o.u.}} + P_n,$$

where $Z_{\text{p.r.}}$ are the wages (basic and supplementary) for production workers, with deductions for social insurance, in the designed (or planned) calculation of the prime cost of the article; $Z_{\text{o.u.}}$ are the wages of the other industrial-production personnel engaged in the servicing and management of production (auxiliary workers, engineers, technicians and others), with deductions for social insurance, computed per article; and P_n is the standard profit.

Calculations in accordance with this formula are simple and are based upon planning and reporting documents, which helps to support their authenticity. The wages of production workers are cited in any planning or accounting calculation. But the remaining wage per unit of output has to be determined by a special computation, using the coefficient K_z, which characterizes the ratio of the sum of the wage of industrial-production personnel engaged in servicing and managing production ($Z_{\text{o.u.}}$) to the sum of the wages of production workers

$$Z_{\text{o.u.}} = Z_{\text{p.r.}} \cdot K_z; \text{ and } K_z = \frac{Z_{\text{p.p.}} - Z_{\text{p.r.}}}{Z_{\text{p.r.}}}$$

where $Z_{\text{p.p.}}$ is the sum of the wages of all industrial-production personnel.

The question of standard profit (P_n) is of basic significance. The fact is that until now, when wholesale prices are formulated for specific products, profit has been included in them proportionately to the full prime cost, including the material expenditures contained thereon. For industry as a whole, material expenditures are more than 80 percent of all production expenditures. If total profit in the wholesale price depends upon the full prime cost of production, then it is more advantageous to produce articles that are relatively materials intensive; both the price and the amount of profit will be more. Under such circumstances, the inclusion of profit in the standards for net production, which is called for in the wholesale prices, would contradict the tasks of using the net production indicator: the distorting influence of material expenditures would definitely be retained (through profit), but the task is to eliminate its influence.

Now this contradiction has been eliminated. The CPSU Central Committee and USSR Council of Ministers decree of 12 July 1979 required that profitability be determined in processing branches of industry in accordance with the types of production as a ratio of profit to prime cost, with allowances for the cost of the raw materials, fuel, energy, materials, semifinished articles and outfitting articles that are used. Because of this, when standards for net production are formulated, profit will be included to the extent to which it is included in the wholesale price. This will greatly facilitate the development of standards, and for price-setting organs it will facilitate checking thereof for approval. The necessary interdependence of standard net production and wholesale prices will be provided for.

Standards of profitability that are used in formulating wholesale prices and NChP are determined by price-setting organs in a centralized procedure. In so doing, it is natural that the standards of profitability obtained in relation to in-house expenditures, that is, to prime cost, with allowance for direct material expenditures, are 2-fold to 2.5-fold higher than in relation to the full prime cost of production.

The sum of the profit by branch as a whole is not changed in this case. It is determined in accordance with the standard of profitability, which is computed in relation to the value of the production capital, with a view to providing for cost accounting for reproduction: the introduction of payment for the use of capital in the established amounts, the formation of economic incentive funds, and deductions into the unified fund for developing science and technology, and so on. But distribution of the industry's total profit by groups of items (according to the price lists) are changed considerably, depending upon the structure of their prime cost (the share of direct material expenditures allocated in the costing and in reports on prime cost). For example, in Price List 20/03 for diesel engines, the standard for profitability versus full prime cost was set at 20 percent, and versus prime cost with allowance for material expenditures--at 40 percent; in Price List 19/02 for mining equipment, the standard versus full prime cost was set at 19 percent, and versus prime cost with allowance for material expenditures--at 46 percent. Let us cite an example of the calculation of NChP for a diesel-generator, in accordance with the data of the manufacturing association. The wage fund here for industrial-production personnel as a whole was, according to the data of the annual report for 1978 (from Form No 5), 39,834,000 rubles, and the wage fund for production workers, basic and supplemental (from Form No 6), was 13,881 rubles. Consequently, the wage fund for industrial production personnel for servicing and management of production (auxiliary workers, engineers, technicians, white-collar workers, and junior servicing personnel) was

$$39{,}834{,}000-13{,}881{,}000 = 25{,}953{,}000 \text{ rubles.}$$

According to this data, we find the coefficient K_z as the ratio of the sum of the wage fund for personnel for servicing and management of production ($Z_{o.u.}$) to the wage fund for production workers ($Z_{p.r.}$):

$$K_z = Z_{o.u.}:Z_{p.r.} = 25{,}953:13{,}881 = 1.94.$$

Consequently, for each ruble of the wage fund for production workers in the association there are 1 ruble and 94 kopecks of wage fund for the remaining industrial production personnel. This coefficient varies by enterprise, from 0.7 to 2.1 and more, as a function of the share of production workers in total manpower, the presence and numbers of design-development and industrial-design elements, and so on.

The full prime cost of the diesel-generator, according to the plan for 1980, is 60,543 rubles, including the direct material expenditures--31,943 rubles, and the wage fund for production workers with deductions for social insurance is 5,773 rubles. According to this data, the standard for net production equals: 5,773 + 5,773·1.94 + (60,543 - 31,943)·0.4 = 5,773 + 11,200 + 28,600·0.4 = 16,973 + 11,440 = 28,413 rubles.

This is how the standards for net production are determined for the whole products mix of articles. After multiplying the quantity of each type of output by the established standard and adding the products obtained, we get the amount of net production. For example, if 50 diesels of the given type were produced, then, at a wholesale price of 46,000 rubles per machine, they will be included in commodity production in the amount of 2,300,000 rubles (46,000·50), and for net production--in the amount of 142,100 rubles (28,413 rubles·50 units) [should be 1,421,000, trans. note]

The standard net production indicator will be used in determining the pace of growth of the physical volume of production and of labor productivity, and for planning the wage fund and for monitoring its disbursement. The latter circumstance is of especially great significance because of the use of standards methods for planning wages. If standards for wages per ruble of commodity production are established in industries with a high share and changing composition of material expenditures and products mix, the advantages of the standards method would be lost to a considerable degree: growth of materials intensiveness in production would give an enterprise an undeserved right to an increase in the wage fund, while a reduction of materials intensiveness would be accompanied by strangulation of the enterprise's interests. The use of a standard net production indicator provides objectivity in evaluating the work of enterprises and its actual contribution to the national economy's development and eliminates the motivation for a growth in the output of materials-intensive products.

The dynamics of standard net production per worker produces an objective description of the impulse of living labor. Measurement of the effectiveness of all social labor, including the use of past labor, on the basis of standard net production is impossible; this is an independent problem that is solved by other means.

The stability of the standards that will be approved by price-setting organs, as a rule for 5 years, provides motivation to reduce the labor intensiveness of products. And the motivation to develop cooperativeness in production is increased; if, instead of manufacturing some individual parts (rings, cylinders, bushings and so on) with their own forces, a plant will begin to obtain them outside, then the standard is not changed. Only where there are considerable changes in production ties is the standard reexamined.

Primarily machinebuilding, the forestry and wood-processing industry, and the building-materials industry are converting to the use of the NChP indicator, with later introduction of this indicator in all branches of the processing industries.

It is already being used now in planning and evaluating the activity of four ministries: Minenergomash [Ministry of Power Machine Building] (since 1 July 1976), Mintyazhmash [Ministry of Heavy and Transport Machine Building] (since 1 July 1977), Minlegpishchemash [Ministry of Machine Building for Light and Food Industry and Household Appliances] (since 1 January 1980), and Minzhivmash (since 1 January 1981). All the other branches (ministries) of the processing industries will convert to use of the new indicator in 1982.

Evaluation of the Results of Economic Activity

In accordance with the CPSU Central Committee and USSR Council of Ministers decree of 12 July 1979, evaluation of the results of economic activity, and also of economic incentives therefor, are made primarily on the basis of fulfillment of the plan for shipping products for equipment-production purposes and consumer goods in accordance with the products mix (assortment) and during the periods that correspond with the contracts (orders) concluded, and on the basis of an increase in labor productivity, improvement of product quality, and growth of profit (in individual branches--by reducing the prime cost of production). As before, the volume of realized production will be approved for enterprises in annual plans, but the role of this indicator in the evaluation of their work is fundamentally changed.

The essence of the process itself of realization is not being changed, of course. The current advantages of using the realization indicator come from the fact that we are dealing with realization by specific commodities, not with fulfilling the plan for total realization by volume, in which the interdependence of concrete suppliers with specific customers is extinguished. Like every generalizing indicator, realization volume does not reflect the terms for delivery (quality, deadlines, variety and so on) of specific products, although the suppliers are supposed to observe these terms, and the main task consisted in introducing into practice the realization indicator that was approved.

Customers' demands are not a faceless mass of commodities that are to be realized but are individual concrete commodities or a group of them. This is why a procedure has now been set under which, when the work of enterprises is being evaluated and incentives are being offered, not the total volume of realization is considered but the indicator of fulfillment of obligations and tasks for shipping output. In order to determine realization from planned volume, the amount of the shortfall in deliveries of production is subtracted for each contract and order. Consequently, although the whole analysis is done in terms of value, it is based upon the in-kind content of production and reporting of the fulfillment of obligations for shipping specific articles of the established quality and by the deadlines called for in the contract.

Where tasks and commitments for shipping products in accordance with contracts (or orders) are met for each quarter and by running totals from the start of the year, the material incentive fund is increased up to 10 percent. Where tasks and commitments for shipments of products have not been fulfilled, the material incentive fund is reduced in accordance with the standards set (but not lower than 1 percent of the material incentive fund for each percent of nonfulfillment of the plan for realizing production, taking into account the fulfillment of shipping obligations). Bonus amounts also are decreased accordingly. If the shortall in fulfilling obligations for shipments is higher than the maximum percent set for the given enterprise, its managerial workers are deprived completely of bonuses for the given period. Such a procedure orients the activity of each enterprise to the final results, since irreproachable fulfillment of commitments to clients and customers is its main task, and the main final result of its activity.

Constant orientation to the needs of the customer, which is expressed by the final results of production, is a necessary condition for successfully solving one of the basic tasks defined by the CPSU Central Committee's draft for the 26th party congress, "The Main Directions for the Economic and Social Development of the USSR for 1981-1985 and for the Period up to 1990": /"Provide for the further economic progress of society and deep qualitative improvements in the materials and equipment base on the basis of an intensification of social production, a rise in its effectiveness, and an acceleration of scientific and technical progress."/* This task also defines the work to improve economic indicators, which will continue during the 11th Five-Year Plan in the development of measures already accomplished during the five-year plan period which has now been completed.

The measures for improving the system of plan indicators called for by the CPSU Central Committee and USSR Council of Ministers decree of 12 July 1979 was not exhausted by the measures examined above. Many other measures also are of great significance: the establishment of tasks to fulfill scientific and technical programs, an evaluation of fulfillment of the plan for running totals, and so on. All these measures have a common purpose--they orient production elements to achieving high final national-economic results.

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*PRAVDA, 2 December 1980, p 2

INVESTMENT PRICES, BUDGET AND FINANCE

ESTONIAN OFFICIAL DISCUSSES FORTHCOMING PRICE REFORM

Tallinn KOMMUNIST ESTONII in Russian No 9, Sep 80 pp 36-40

[Article by Yu. Vladychin, chairman ESSR State Committee on Prices: "Prices and Production Efficiency"]

[Text] Increased production efficiency, the June CPSU Central Committee Plenum noted, must be constantly in our focus. Now, during the important days of the 26th party congress preparations, it is necessary to make an in-depth analysis of all aspects of economic development. The increased role of economic management methods and the increased scope, range and forms of production cooperation have brought a noticeable increase in the importance of prices within the national economic management system.

The indicators which describe the efficiency of enterprise and association performance--such as, the capital-output ratio, material-output ratio, cost, profit, profitability and others--can only become reliable levers for improving management standards if they are based on economically grounded prices. The goal of accelerating scientific and technological progress, improving product quality and conserving material and manpower resources requires more active utilization of pricing's function as an incentive. Of special importance in accomplishing the goals advanced by the CPSU Central Committee and the USSR Council of Ministers in the decree: "On Improving Planning and Increasing the Effect of the Economic Mechanism to Improve Production Efficiency and Job Performance" is improvement in industrial product pricing. This primarily concerns wholesale prices for producer-oriented products as well as consumer goods.

It is necessary to fundamentally improve the job of pricing so it will actually be one of the major tools for implementing the party's economic policy.

Improving industrial product pricing is an extremely complex and multi-faceted process. While a lot has already been done in recent years, the work in this area must be continued in the following areas: review wholesale prices and tariffs to ensure they more completely reflect socially required expenditures on product production; improve pricing methods for new items to ensure an incentive for enterprises and associations to put highly efficient, new types of products into production; increase the economic incentive for improving product quality and for making efficient utilization of labor, materials and natural resources; ensure the required flexibility in prices, simplify procedures and reduce the time period for developing and approving new product prices.

A routine review of industrial wholesale prices and tariffs is necessitated by the fact that current prices and tariffs were primarily developed on a 1967 price base and are already significantly out of date. They inadequately reflect the changes which have taken place in the pattern of production and in the allocation of productive forces and they do not conform to the modern production and sales environment.

Raw materials and fuel production are shifting more and more to the country's northern and eastern regions; there has been a deterioration in the geological mining environment of previously developed regions; there has been an increase in expenditures for environmental protection; and major steps have been taken to adjust wages and increase depreciation write-off rates for a number of industrial sectors. As a result, there has been a significant reduction in the profitability of production while mining, logging and heat generation are even operating at a loss. The negative effect of geological mining conditions has not been offset in recent years by progress in science and technology. New machinery and equipment is being brought on line slowly. In many cases, new and updated equipment is only 10-20 percent more productive than the previous equipment and this does not permit the user to make appropriate increases in production volume and labor productivity.

Many ministries, departments, associations and enterprises are not devoting the appropriate attention to increasing conservation, improving resource evaluation and reducing product costs; they are not fulfilling plan targets for conserving fuel, power and other physical resources and for labor productivity growth.

At the same time, as a result of reduced costs, there is high profitability in the production of many types of chemicals (polyethelene, polypropolene, polyurethane foam, polyomides and others), electronics, machine building and other products. This will make it possible to reduce wholesale prices for the types of products mentioned above in spite of the increased prices for products from the basic materials sectors.

All levels of the pricing system have now expanded the job of developing and approving new wholesale pricing handbooks.

The basis for the new price projections was 1980 planned costs, accounting for external cost increases or decreases and also for the increased deductions for social insurance in the 11th Five-Year Plan (from an average of 7.5 percent to 14 percent in most industrial sectors). The new wholesale prices will be put into effect on 1 January 1982. Therefore, enterprises and associations have an opportunity over a two-year period to earn additional profits by reducing costs: the profit margin standards only take into account the amount of profit required for normal enterprise operations (from computed payments for producer goods, an increase in its own working capital allowance, payment of interest on bank loans and recovering losses for housing and public utilities, i.e., without forming any net surplus profits). It is only for local industrial enterprises, cooperative organizations and public organizations that there are already provisions in the profitability standards for subsequent development of these systems. Thus, for the majority of sectors, provisions have been made for standards within a range of 12-15 percent for producer goods. Until now, when setting wholesale prices for specific items, profit to total cost standards were used. The standards were set by relating the required amount of profit to the cost of goods produced and they were individualized for the respective commodity groups (price lists). On the average, these standards were also approximately 15 percent.

A fundamentally new approach to methods for setting the size of profits, which are included in the new wholesale prices, was outlined in the CPSU Central Committee and USSR Council of Ministers decree "On Improving Planning and Increasing the Effect of the Economic Mechanism to Improve Production Efficiency and Job Performance." Price setting for specific items now involves determining the profitability by product type as a ratio of profit to cost after deducting the value of raw materials, fuels, power, materials, semi-finished items and completed items used, i.e., to cost after deducting direct materials cost.

These profit margin standards have already been developed and approved for the republic's wholesale price list. To guarantee an industry the profits required for normal management, the computed amount of profit was related to cost less direct materials cost. The profitability standards obtained by this method for commodity groups were differentiated within a broad range (from 20 to 180 percent) and this ensured that all enterprises fulfilling the plan received the necessary profit.

Economists in industry and pricing agencies must now conduct a good, timely review of wholesale prices. They will primarily have to project new prices based on progressive, technically sound labor-output and materials-output standards. We cannot concur with suggestions to consider certain reserves in prices in case of unforeseen, objective appreciation factors. We believe that all the republic's industrial sectors are able to further increase profitability by reducing product cost and improving product quality.

However, in analyzing the past years' performance results, one cannot help but note the increasing negative trends in cost dynamics for certain types of products (unit cost in rubles and kopecks):

Years	1968	1972	1976	1979
Brick, clay (per 1,000)	39.26	41.04	46.40	52.51
Brick, lime-and-sand (per 1,000)	18.45	21.83	24.29	28.36
Brick, peat (per ton)	9.18	9.68	13.35	19.03

A lot of similar examples of a systematic increase in the cost of specific types of industrial products could be cited. In our opinion, this is promoted by insufficiently stringent planning indicators for individual industrial enterprises and associations.

Here is another example. The ESSR Ministry of Local Industry's Tartuskiy Experimental Foundry-Machine Shop produces cast iron furnace products (furnace doors, latches, burners and others) which were unprofitable for years. To increase the enterprise's production incentive for these articles, prices were increased by almost 50 percent (allowing for a profit margin of 10 percent) on 1 April 1978. But, accounts show that there was no significant increase in production volume (except that caused by the price increase) or in profit margin:

Years	1976	1977	1978	1979
Production Volume (thousands of rubles)	170.4	179.2	265.9	288.0
Profit (percent)	-32.2	-32.0	-11.3	-10.8

There is only one way, which was indicated by Comrade L. I. Brezhnev, to achieve good economic indicators--reduce materials and labor costs in production. Only then will the new wholesale prices serve as an instrument for carrying out economic policy.

The increase in wholesale prices in basic materials industrial sectors does not cause any change in retail prices for consumer goods. For example, to ensure normal management conditions at peat enterprises, the ESSR State Price Commission was forced to increase the wholesale price of peat bricks to 23 rubles per ton. However, the peat will continue to be sold to consumers at the previous price of 11 rubles per ton. The price difference is made up by the state budget. This is routine evidence of the great concern shown by the party and government to ensure stable retail prices for basic foodstuffs and industrial goods.

The revision of wholesale prices also should not cause additional, unrecoverable costs in agriculture. The reduced prices for mineral fertilizers and agricultural machinery and the preferential rates for electrical power will be maintained for this sector. Plans call for making up the remaining price increases with a corresponding increase in purchase prices for individual types of agricultural products.

Along with periodic revisions of wholesale prices, an improvement in price setting methods for new types of products is of significant importance in improving the pricing system. Wholesale prices for new products should be set in conformity with the level of current prices for similar products, considering the economically valid cost of producing the new items and materials and the economic impact of using them. The problem is one of simultaneously providing an economic incentive for enterprises which manufacture new, progressive and economically efficient products and of ensuring a relative reduction in product price for the consumer (considering a unit of productivity, capacity or other useful effect).

Naturally, following these principles presupposes that there are economically based prices for interchangeable and similar products. Unprofitable or highly profitable base products make it difficult to develop wholesale prices equally advantageous for both the manufacturer and consumer of the new products. This is why there is a requirement for periodic improvement and for providing a certain level of flexibility in the pricing system.

At present, to increase the effect of prices on enhanced quality and efficiency of new products, the price setting method developed at the end of the 60's for new types of products is being updated. Until now, new products, especially equipment, have not been efficient enough for consumers.

Along with the economic incentive for enterprises manufacturing new products, there must be provisions for product efficiency from the consumer's point of view--this is the basic requirement for scientific and technological progress. Right now, the actual "modernization" of a significant number of new machine building products boils down to reapproving specifications. As a result, new and modernized equipment is only 10-20 percent more productive and durable as against required growth by a factor of 1.5-2. While trying to increase new product quality and efficiency, more attention should be focused on developing, coordinating and filing the production standards documents and attached estimates of economic efficiency.

The shortcomings in putting new types of machinery and equipment into production could be discussed for a long time. It is obvious that economic measures alone will not solve all these problems; the time is ripe for more aggressive utilization of planning and administrative levers.

In recent years, industrial product quality has improved significantly. However, the role of pricing as an incentive was insignificant: the price mark-up for producer goods with the Seal of Quality was about 3 percent and the mark-up for consumer goods was somewhat less. The usual assertion is that the plan plays theprimary role in increasing production volume, updating product mix and improving product quality but this does not at all preclude the need for increasing the wholesale price system's function as an incentive. This function should especially be felt on the mix within commodity groups where the direct effect of the plan does not reach. The above-mentioned CPSU Central Committee and USSR Council of Ministers decree anticipates a significant increase in the role of prices as an incentive to improve product quality and update product mix. Procedures were introduced for setting incentive mark-ups for new, highly efficient products and penalty discounts for products of second-class quality or which were not certified within the deadline. The new procedures consist of the following.

Pricing agencies set wholesale price mark-ups for new highly efficient types of products of from 0.5 to 1.25 of the profit standard (i.e., an average of 8 to 20 percent) depending upon the annual economic impact but no greater than 70 percent of the size of this impact.

Up to 70 percent of the additional profits (from the total wholesale price mark-ups) is directed to the enterprise or association economic incentive fund and the remainder is distributed equally between the integrated scientific and technological development fund and the state budget.

Wholesale prices for second-class quality products and products which were not certified by the deadline are reduced so that the enterprise retains 50 percent of the profits from the sale of these products. Moreover, the products are sold to consumers at undiscounted prices; however, the sum of these discounts is entered into the appropriate budget by enterprises and associations without additional notations.

Relatively few second-class quality products were produced in our republic last year: a total of only 6.1 million rubles (including 4.6 million rubles at the Estonian Shale Association). Production of products subject to certification but not certified was 95.4 million rubles. Unfortunately, current accounting procedures do not make it possible to track what part of these products had already passed the certification deadline. Nevertheless, it is clear that enterprises and associations must focus more attention on improved quality and timely certification of industrial products.

In past years, the role of prices as an incentive in conserving physical resources was extremely insignificant. It must be recognized that the current wholesale price system, where profit is charged to total cost, stimulates an increase in materials consumption. Although individual attempts were made to reduce the incentive for materials consumption (for example, by only entering 3 percent of the profits for components), this did not have any noticeable results. There is a fundamental change made in this situation by the CPSU Central Committee and USSR Council of Ministers decree; pursuant to this decree, wholesale prices are set based on cost after deducting the value of raw materials, fuel, power, materials, semi-finished items and components. If there is an unjustified increase in materials consumption, enterprises and associations also will not gain any advantages through additional profits, standard net production and increased growth rates. The new approach to setting wholesale prices should have a positive, noticeable impact in the 11th Five-Year Plan and, primarily, in the processing sectors of heavy industry.

As already noted, on 1 January 1982, there will be an increase in state social insurance rates in order to stimulate efficient manpower utilization, to cover the cost for manpower generation better and to gain a better determination of the economic efficiency of new equipment. But, this measure obviously will not be as effective as stimulating a reduction in materials consumption.

It is extremely difficult to ensure the requisite wholesale price stability. Average sector costs and product capital-output ratios are continually changing; therefore, if prices are constant, they quickly stop meeting socially required costs. This is manifested in a significant deviation of actual sector or specific item profits from the standard. Under these conditions, prices lose their role as the most important social standard to measure the effectiveness of planned or projected decisions.

A one-time revision of all wholesale prices is a difficult and labor-consuming process. After new prices were introduced in 1967, it was anticipated that flexibility of the wholesale pricing system would be guaranteed by gradual revisions of individual price lists. However, experience has shown that this does not guarantee proper price relationships among individual types of products and it leads to excessively frequent revisions of plan indicators. At present, it has been established that wholesale prices should be revised no more than once every five years in order to ensure wholesale price stability. Moreover, it is desirable to conduct revisions within periods where the new prices can be used to prepare the next five-year plan. In the extractive industries, it is even possible to maintain a stable wholesale price level over two five-year plans, which would promote an improvement of prices in the processing sectors.

At the same time, it is necessary to reemphasize that a changing production environment assumes a certain degree of mobility and flexibility in wholesale prices. We believe it would be possible to use various allowances and discounts for current prices, change prices only for product manufacturers (transferring the difference in prices to the state budget) and introduce graduated prices primarily in machine building, and fixed payments for highly profitable products.

Many consumer goods do not have authorized wholesale prices. Their wholesale prices are determined on the retail price basis less commercial discounts and turnover taxes. In this case, the level of item profits is regulated by changing turnover tax rates.

In the 60's there was a wide range of product types for which fixed wholesale prices were developed (the prices were actually used to determine output volume and to calculate the turnover tax). A lot of wholesale price lists were developed especially for recreational, household and domestic goods. Subsequently, this work was discontinued and a final opinion has not been formed about the advantages and shortcomings of these two systems. Since net production standards are being developed for almost all industrial products at present, it is obviously necessary to thoroughly analyze both wholesale pricing systems for consumer goods and plan ways to further improve performance in this area.

While strictly observing the requirement to maintain a stable level of current retail prices, pricing agencies have significantly improved the price lists being used in recent years, primarily in order to develop standard price variables. These price lists, in the form of tables, variable series, etc., make it possible for industrial enterprises and associations to set prices for new items without consulting the price committee. This method is efficient and it guarantees price stability and the ability to coordinate prices and product quality in the best possible manner. In recent years, standard retail price variables have been introduced for major commodity groups, such as men's and ladies' clothing, furniture and others.

Enhanced quality, rapid update and expansion of the goods mix stimulate temporary increases in retail and wholesale prices. Temporary prices can be set for non-food goods with new designs, original models or styles, enhanced trim or coloring, improved reliability, longer guaranteed service life, etc. They can be set for up to a three-year period and they are approximately 10 percent higher than the constant prices (as a rule, less than 10 percent for children's items and 15-30 percent for especially fashionable items). In the author's opinion, this is an efficient way of stimulating an update and expansion of the goods mix and improved quality since the basic part of this allowance remains at the disposal of the industrial enterprises and associations and it is directed at recovering additional costs, providing bonuses and increasing profits.

The production of new, improved quality goods is well organized within the ESSR Ministry of Light Industry where over 90 million rubles worth of goods were produced for 1979. Although product quality of enterprises in a number of other industries is also rather high, they are not producing enough goods with the N symbol and they are therefore deprived of the additional incentive.

In this case, the prices perform their function as an incentive well and the enterprises and associations should organize a systematic introduction of new, improved quality goods in the near future.

As Comrade L. I. Brezhnev pointed out at the June CPSU Central Committee Plenum experience sets newer and newer goals for us. At the forthcoming 26th party congress, the party will define ways to accomplish them. The duty of economic agencies is to assist in implementing the party's plans in every way possible. Active and accurate implementation of new methods and organizational regulations to improve pricing will make it possible to noticeably improve the role of prices in improving product quality and industrial production efficiency during the 11th Five-Year Plan.

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LONG-TERM RESOURCE REQUIREMENTS INDICATORS EVALUATED

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/Article by G. Pokarayev, A. Zaytsev and O. Karasev: "Determination of Long-Term Indicators of Expenditure of Material Resources"/

/Text/ To determine the long-term need of the national economy for material resources and to compile material balances, the USSR State Planning Committee and ministries, departments and state planning commissions of the Union republics with the enlistment of branch institutes, production associations and enterprises are developing, in accordance with the decree dated 12 July 1979 of the CPSU Central Committee and the USSR Council of Ministers "On Improving Planning and Strengthening the Influence of the Economic Mechanism on Increasing Production Efficiency and Work Quality," a standard base of the long-term plan, whose ultimate goal is the determination of scientifically substantiated norms of expenditure (specific expenditures) of resources.

Long-term indicators of specific expenditure of raw materials, supplies, fuel and thermal and electric power should be technically and economically substantiated, correspond to the forecast level of advanced technology, techniques and organization of production and ensure a rational expenditure of material resources on output and on an increase in the economic efficiency of production. For the fullest reflection of the enumerated requirements in the system of advanced technical and economic norms and standards of types of operations and expenditures (saving) of labor, raw materials, supplies and fuel and power resources, standards for the utilization of production capacities and specific capital investments, norms and standards for the determination of the need for equipment and cable articles a number of interconnected indicators of expenditure and utilization of material resources have been envisaged, indicators whose overall use will make it possible to increase the scientific substantiation of expenditure norms.

The following pertain to such indicators: norms of expenditure of material resources and assignments for their average reduction; standards of technological waste and losses; standards of specific expenditures per unit of surface, mass and length; coefficients of utilization of materials; expenditure of materials per unit of specifications; output of a product or semiproduct; coefficients of extractions of output from initial raw materials or supplies; standards of maximum expenditure of key material resources and so forth.

At present the methodological support for the formation of a long-term standard base often proceeds from the calculations of the standard base for current and average-term plans. The brief methodological directives "Long-Term Coefficients of Direct Expenditures for Calculations According to the Diagram of the Long-Term Interbranch Physical Value Balance" developed by the consolidated division of the national economic plan of the USSR State Planning Committee and the Scientific Research Institute of Economics under the USSR State Planning Committee are the only document containing in general form the procedure for the substantiation of long-term standards. According to these directives long-term standards are substantiated with due regard for factors affecting the change in their magnitude during the planned period, especially factors connected with the effect of scientific and technical progress. At the same time, it is not indicated in what way the factors should be taken into account. The "direct accounting method" used in the calculation of the norms for the annual and 5-year period is recommended for calculations of average branch standards.

This article examines problems connected with improving the methodological principles of formation and evaluation of indicators of specific expenditure and saving, as well as indicators of utilization, of material resources in industry.

An analysis of the used, as well as the possible, methods of formation of a long-term standard base has made it possible to conclude that, to obtain evaluations of the level of long-term indicators of specific expenditure and saving of material resources, the apparatus of mathematical statistics and forecasting methods can be utilized. Thus far in the methodological documents on the standardization of material resources a formalized description of the forecasting of long-term indicators of expenditure of material resources has not been examined, although forecasting methods (basically, the time extrapolation method) with the appropriate boundary conditions are used in the practice of calculations of the standard base. Taking this into account, it is advisable to formulate the following basic methodological principles for the formation of long-term indicators of specific expenditure and saving of material resources in industry:

Indicators should be developed on the basis of the social and economic tasks determined for a long-term period and of the overall program for scientific and technical progress prepared by the USSR Academy of Sciences, the USSR State Committee for Science and Technology and the USSR State Committee for Construction Affairs. During their formation it is necessary to utilize output forecasts in branches taking into account purposeful overall scientific-technical, economic and social programs.

Indicators are formed in accordance with the consolidated list of material and fuel-power resources, output and operations adopted for the long-term plan;

Specific expenditures (group and weighted-mean norms) and saving of resources should serve as the basic indicators of the standard base. In some cases, with a stable nature of the production of an individual product and a considerable volume of its output, an individual norm of expenditure can be selected as the long-term indicator of expenditure.

In our opinion, long-term indicators of specific expenditure of material resources, as a rule, should be determined by forecasting methods with the use of mathematical statistics; for example, by the regression modeling method, which makes it possible to carry out the economic and mathematical modeling of the processes of formation of indicators of expenditure of material resources under the effect of technical and economic factors on the basis of report data for the past period (prehistorical period) and information on the level of these factors during the forecast period (lead period).

The mathematical problem is formulated in the following way. It is necessary to find the analytic expression of the dependence of the indicator of specific expenditure (Hy) on the factors determining it ($X_1, X_2, X_3, \ldots, X_n$). The object of the calculations is to disclose the nature and degree of effect of the factors on specific expenditure.

The calculation of long-term indicators of specific expenditure by the regression modeling method includes the following basic stages:

determination and selection of factors having a significant effect on the indicator of specific expenditure in the past and making it possible to correctly evaluate its dynamics;

study of the nature of relation between specific expenditure and the selected factors and on this basis selection of the mathematical function most fully expressing the sought form of relation;

analysis of the found regression equation consisting in the determination of the need for its refinement, correction and subsequent economic interpretation of the phenomenon under consideration;

calculation of the indicator of specific expenditure and evaluations of its reliability and accuracy.

The selection of factors is connected with a professional-logical and quantitative analysis. At the stage of the professional-logical analysis the factors significantly affecting the level of the indicator of expenditure are revealed through the generalization of professional knowledge of the object of forecasting (norms of expenditure) and the use of data in the literature, consultations and so forth. At the same time, the factors are divided into design and technical factors (reflecting the consumer properties of output) and organizational-technical factors (reflecting production conditions).

The effect of measures on the saving of material resources planned on the basis of the achievements of science and technology on the amount of specific expenditure should be taken into account by means of argument factors, which characterize technical and structural parameters, production of products or the products themselves, and be reflected in an appropriately selected regression model. The change in the level of the indicator of specific expenditure and technical and economic factors during the retrospective period (10 to 15 years) is determined for the calculations.

The selection of factors for the regression model by means of quantitative evaluations is made by the correlation analysis method through the determination of the closeness of relation between the indicator of specific expenditures, on the one hand, and each factor and level of the mutual effect of factors, on the other.

When analyzing the factors affecting the specific expenditure of resources, it is necessary to disclose whether they have reached their maximum value, that is, a parameter whose increase is either technically impossible with given technology, or economically inadvisable. The attainment of maximum values for key technical and economic factors should be taken into account during forecasting for the purpose of determining the possibility for a qualitative change in the development of the object of forecasting. If significant changes in output are envisaged during a long-term period and if it is developed according to new principles (usually, this occurs when the main parameters of output reach the maximum values, when there is a backlog of new developments and when consumer demands are changed), expert evaluations can be used in the refinement of long-term indicators of specific expenditure of resources.

The data on specific expenditures and factors are calculated on computers. After a comparison of the remainder variances of the mentioned models the optimum form of relation is selected from those envisaged by the program, which most closely describes the real dynamics. Since the selected form of relation is approximate regression, because it was found on the basis of a limited selection, an analysis of the selected regression is made.

An economic interpretation of the regression model is made by means of a scaled coefficient of elasticity showing by how many percent specific expenditure will change when a factor changes by 1 percent with a fixed level of other factors. With a simple extrapolation of indicators of specific expenditure calculated for the value indicator of the volume of output time (prehistorical period and lead period) is a factor.

The determination of the saving of material resources in absolute and relative (average reduction in norms of expenditure) terms for a long-term period for a group of products (or, if necessary, for an article or a unit of work) and also as the result of implementation of measures for the saving of resources at an enterprise, association (combine), ministry (department) and a Union republic should be made by forecasting methods (including regression modeling and trend extrapolation), as well as by means of a structural analysis of specific expenditures (norms) calculated for a long-term period. Let us examine this proposition at greater length. The general average change in specific expenditure as a result of the introduction of saving measures and change in the structure of output in the corresponding year of a long-term period in a running total in relation to the year preceding the planned period is determined on the basis of the data on long-term indicators of specific expenditures of material resources.

The average reduction in the specific expenditure of a material resource as a result of saving measures during a long-term period is evaluated with due regard for the average change in specific expenditure during a long-term period under the effect of value and structural factors. This change is calculated on the basis of report data on the general change in specific expenditures and the average reduction in norms of expenditure of material resources as a result of saving measures.

When the standard base for 1990 and 1995 was formed by the regression modeling method, indicators of specific expenditure and saving of material resources for a number of groups of industrial products were calculated. Data on indicators of expenditure and saving of resources, as well as on the level of norm forming factors during the 9th and 10th five-year plans, were selected for an analysis and calculations with the use of computers. For example, when the group weighted mean norm of expenditure of rolled ferrous metal on passenger cars was determined, a regression model characterizing the relation between the norm of expenditure and the average number of passenger seats was used. In this case the coefficient of correlation between the norm of expenditure and factor X was 0.92.

Coefficients of utilization of materials in production are used for an evaluation of the progressive nature of technology and of the established norms of expenditures, as well as during the calculation of norms of expenditure on the manufacture of models and experimental batches of new articles. For a long-term period these coefficients, as well as the average reduction in the specific mass, specific waste and losses of a material, can be calculated by means of the data on the average reduction in the specific expenditures of a material as a result of the introduction of saving measures during a long-term period, on the coefficients of utilization of a material in the year preceding the planned period and on the average reduction in specific expenditure (norm) as a result of the reduction in the mass (net weight) of a material, which is determined with due regard for the report data on actual saving as a result of the reduction in the mass of a material.

To increase the efficiency of utilization of material resources at all the stages (design, production and operation) of the development and use of machinery, equipment and other industrial items, it is necessary to ensure a reduction in the mass (net weight) of output and in the specific expenditure of material resources, as well as an increase in the coefficient of utilization of materials.

Indicators of specific expenditures (norms) developed for a long-term period can be evaluated not only from the standpoint of their use for the determination of the need for material resources and the compilation of material balances, but also from the point of view of their structural content. At the same time, there is a possibility for a purposeful effect both on the norms of expenditures and on the mass of articles and on losses and waste during their production. For example, on the basis of report data on specific expenditures and coefficients of utilization of materials it is advisable to determine the indicators of the average reduction in the mass of a material and decrease in its waste and losses in production as a result of saving measures during the years of a long-term period as purposeful indicators. In this case the average reduction in the specific expenditure of a resource as a result of saving measures is calculated at first and the coefficient of its utilization over a long-term period is determined. The general average change in specific expenditure as a result of the introduction of saving measures and change in the structure of output and magnitudes of specific expenditure and saving of a material in absolute terms during a long-term period are determined on the basis of these indicators and specific base expenditures.

The expenditure of materials per unit of specifications of an article or group of articles (per unit of capacity, lifting power, productivity and so forth) is an important technical and economic characteristic of machinery and equipment. Therefore, an evaluation of the quality and technical level of products planned for output for a long-term period should be made by means of such indicators as the specific expenditure of key types of materials (or of all metals) and the specific mass per unit of specifications or parameter most fully characterizing the consumer qualities of output. As a rule, for a long-term period these indicators should be calculated for groups of industrial products, because groups of articles are more stable in time than types (makes and kinds) of products. For example, makes of motor vehicles change, but groups of motor vehicles--passenger cars and trucks--continue to comprise objects of long-term planning.

For the selection of specifications or parameters most fully characterizing the consumer qualities of groups of products (or in some cases, articles) it is legitimate to use the correlation analysis method. In this case the sought specifications or parameters are selected on the basis of the determination of the closeness of relation between the indicator of specific expenditure or specific mass and every design and technical factor preselected at the stage of professional and logical analysis and of the calculation of the level of mutual effect of factors. At the same time, the possibility of adopting synthetic indicators representing a combination of several factors as specifications and parameters most fully characterizing the consumer properties of output is not ruled out.

By dividing indicators of specific expenditure of key types of materials (or all metals) calculated for a long-term period and specific masses of output by the magnitudes of the corresponding factors, we will obtain indicators making it possible to evaluate the technical level of output of the long-term plan as compared with similar types of products. At the same time, a purposeful use in planning of indicators of expenditure of material resources per unit of specifications or parameter most fully characterizing the consumer qualities of output remains an important task.

It is well known that the planned volumes of output are determined primarily on the basis of the need of the national economy for it. Observing certain resource restrictions and purposefully affecting a reduction in the specific expenditure of materials, it is possible with a smaller need for materials to produce the necessary (if required, corrected) volume of output. Standards of maximum expenditure of key material resources according to the established list of products or operations developed for a 10-year period (with refinement every 5 years) are to play an important role in this. These standards are used for an evaluation of the progressive nature of specific expenditures (norms of expenditure) of resources on types of products or operations, as well as during the planning and improvement of machinery and equipment by design and planning organizations.

Let us examine the possible methodological principles of formation of long-term standards of maximum expenditure of resources on the basis of the function of these standards.

For an evaluation of the progressive nature of specific expenditures (norms) of material resources it is possible to use standards of maximum expenditure developed with due regard for indicators of specific expenditures calculated for a long-term period, as stated above. At the same time, specific expenditure (norm) ensuring the necessary saving of a resource for a long-term period serves as the maximum permissible (upper) limit of the standard of maximum expenditure. This saving is established in the form of an assignment for the average reduction in norms of expenditure formed with due regard for forecast branch evaluations of saving and national economic requirements for industrial development.

The lower limit of the standard of maximum expenditure of a resource can be determined after an additional (maximum) saving of a material resource is obtained as a result of saving measures, including the provision of production with improved quality materials and substitutes and the use of advanced techniques and progressive design solutions based on an economical expenditure of resources. The enumerated measures should be reflected in the indicators of reduction in the mass of a material and decrease in its waste and losses in production, as well as in the coefficient of utilization of a material during a long-term period with an outstripping reduction in specific waste and losses as compared with a decrease in specific mass. In this case the magnitude of the standard of maximum expenditure of a resource (H_n^T) is calculated according to the following formula:

$$H_p^T = H^{T-P}\left(1 - \frac{\delta_e^T}{100}\right).$$

where T is the lead period;
P is the length of the long-term period;
δ_e^T is the general average change in the specific expenditure of a material resource in a running total during a long-term period as a result of the introduction of saving measures and change in the structure of output with due regard for additional saving measures.

If we use a special calculation for the establishment of additional (maximum) saving, the standard of maximum expenditure is determined according to the following dependence:

$$H_n^T = H^{T-P}\left(1 - \frac{C\delta_e^T}{100}\right) - \text{Э}_e^T,$$

where C is the proportion of the average change during the long-term period in specific expenditure under the effect of value and structural factors;
Э_e^T is the maximum (maximum possible) saving of a material resource.

The specific expenditures (norms) of material resources accepted for use in long-term planned calculations should be in the interval between the standard of maximum expenditure and the indicator of specific expenditure calculated for a long-term period.

For an evaluation of the progressive nature of the developed indicators of specific expenditures, including for the annual and 5-year period, they should be compared with standards of maximum expenditure, that is, the ratio (in percent) of difference of the plan of specific expenditure (norm) and of the standard of maximum expenditure to the plan of the norm of expenditure of a material resource should be utilized.

Of great importance is the formation of standards of maximum expenditure of material resources, by means of which developers in planning and design organizations, when planning new and improving the manufactured machinery and equipment on the basis of given specifications or parameters most fully characterizing the consumer qualities of output, should determine the maximum (technically attainable) norms of expenditure of materials and the mass of machinery and equipment and, subsequently, try to ensure their magnitudes. In this case it is advisable to use as standards of maximum expenditure the maximum expenditure of key types of materials and the maximum mass, including the mass of key types of materials per unit of established indicator (parameter) of specifications of output.

The indicated standards should be developed in conformity with the consolidated list of products or operations established for a long-term period, but with a division of indicators (parameters) within groups of products into intervals. The indicators (parameters) of specifications of products are selected by means of correlation analysis out of the design and technical factors affecting the weighted mean norms of expenditure and the mass of a material. The standards of expenditure and mass of articles per unit of the corresponding indicator are calculated for a long-term period by the extrapolation method on the basis of the data of changes during a number of years in the level of weighted mean norms of expenditure of resources and masses of articles within each interval per unit of indicator (parameter) of specifications of products.

At the stage of design development it is important to establish for the developed products limitations on the mass provided the given indicators (parameters) of specifications are retained. The mass of a planned article is equal to the product of the standard of mass of output (or mass of key types of materials) per unit of indicator (parameter) of specifications of the corresponding interval of a group of products by the magnitude of the given indicator (parameter) of specifications of developed output.

The obtained mass of a planned article is maximum permissible. Its progressive nature can be evaluated by means of the standard of maximum mass, which is the corrected (if this is necessary) standard of mass calculated for a long-term period. The magnitude of the standard of maximum mass is determined on the basis of an analysis of similar output with due regard for its improvement in time, tendency toward a change in the standard during the retrospective period, long-term progressive design solutions and forecast data on efficient design materials. The progressive nature of the mass is evaluated according to the ratio (in percent) of difference of the mass of planned output and the maximum mass (determined by means of an approriate standard) to the mass of planned output.

Given developed standards of the maximum mass of key materials the standards of maximum expenditure per unit of indicator (parameter) of specifications of an article are determined with due regard for the maximum coefficient of utilization of a material. Furthermore, the standards of maximum expenditure and mass of a material resource per unit of indicator (parameter) of specifications of output can be determined on the basis of the same above-stated principles as applied to the development of standards of maximum expenditure utilized for an evaluation of the progressive nature of norms of expenditure of material resources.

In our opinion, the long-term indicators of expenditure and utilization of material resources examined in this article are economically and mathematically interrelated. The use of each of them is aimed at an efficient expenditure and utilization of material resources at certain stages in the development and production of industrial products.

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